

Indiana University – Purdue University Fort Wayne
Opus: Research & Creativity at IPFW

Computer and Electrical Engineering Technology &
Information Systems and Technology Senior Design
Projects

School of Engineering, Technology and Computer
Science Design Projects

12-6-1985

The Audio Graphic Stereo Equalizer

Tania Satterthwaite

Indiana University - Purdue University Fort Wayne

Follow this and additional works at: http://opus.ipfw.edu/etcs_seniorproj



Part of the [Computer Sciences Commons](#), and the [Engineering Commons](#)

Opus Citation

Tania Satterthwaite (1985). The Audio Graphic Stereo Equalizer.
http://opus.ipfw.edu/etcs_seniorproj/558

This Senior Design Project is brought to you for free and open access by the School of Engineering, Technology and Computer Science Design Projects at Opus: Research & Creativity at IPFW. It has been accepted for inclusion in Computer and Electrical Engineering Technology & Information Systems and Technology Senior Design Projects by an authorized administrator of Opus: Research & Creativity at IPFW. For more information, please contact admin@lib.ipfw.edu.

THE AUDIO GRAPHIC STEREO EQUALIZER

Prepared For: Prof. Fred Gideon

Prepared By: Tania Satterthwaite

Date Submitted: December 6, 1985

ABSTRACT

An audio equalizer is a device used with other stereo equipment to literally flatten the frequency response of broadcasts or recorded material. The audio graphic stereo equalizer in this report is designed to have two channels with 15 bands per channel. The bands are broken into three segments. There is two bass bands, 12 midrange bands and one high treble band. The bands are divided by half-octave divisions instead of the typical one octave spacing. The equalizer circuit consists of; the input of the signal through a set of phono jacks, an attenuator/buffer to reduce the signal, a bandpass filter bank to control the midband frequencies, a subtracter to remove three-fourths of the signal, an adder to add back a variable amount of the signal, and a wide-band amplifier network to control the bass and high treble bands.

THE AUDIO GRAPHIC STEREO EQUALIZER

Table of Contents

ABSTRACT.....	i
Table of Illustrations.....	iii
1.0 PRELIMINARY REMARKS.....	1
2.0 DESIGN CONCEPTS OF THE EQUALIZER.....	2
3.0 THE BLOCK DIAGRAM CIRCUIT.....	3
4.0 THE CIRCUIT OPERATION.....	4
4.1 The Power Supply.....	4
4.2 The Input Attenuator and Buffer.....	9
4.3 The Bandpass Filter Bank.....	10
4.4 The Subtractor, Adder and Control Bank Networks....	13
4.5 The Wide-Band Amplifier Network.....	14
4.6 The Signal Return Path.....	16
5.0 THE COST.....	16
6.0 THE CONCLUSION.....	17
APPENDIX A: Proposal.....	21
APPENDIX B: References.....	25
APPENDIX C: Schematic Diagram of the Audio Graphic Stereo Equalizer.....	27
APPENDIX D: Cost Breakdown of Project.....	28

THE AUDIO GRAPHIC STEREO EQUALIZER

Table of Illustrations

1.0	The Block Diagram of the Audio Graphic Stereo Equalizer.....	4
2.0	The Schematic Diagram of the Audio Graphic Stereo Equalizer.....	27
3.0	Schematic Diagram of the Power Supply.....	5
4.0	Schematic Diagram of the Input Attenuator and Buffer...9	
5.0	Schematic Diagram of the 230 Hz Bandpass Filter.....	11
6.0	Schematic Diagram of the Subtractor.....	13
7.0	Schematic Diagram of the Adder and Control Bank.....	14
8.0	Schematic Diagram of the Wide-Band Amplifier Network..	15
9.0	Graph of Equalization vs. Non-equalization.....	18
10.0	Graph Showing the Boost and Attenuation Effects.....	20